

REMARKS

Applicants thank the Examiner for noting in paragraph 1 of the Office Action that a proper RCE was filed with the appropriate fee and for withdrawing the finality of the previous Office Action.

Applicants thank the examiner for withdrawing, in paragraph 2 of the Office Action, all rejections based on the Yeager et al. (US 2001/0053820) reference based on Applicants' Declaration under 37 C.F.R. 1.131, filed on 11/13/2006 and for withdrawing the previously applied art rejections made in view of Dzenis et al. and Follensbee et al., and the rejection of claim 8 over Majumdar et al. in view of Nakajima et al., after considering Applicants' previous arguments.

In paragraph 3 of the Office Action, the Examiner rejected claims 4 and 5 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. More specifically, the Examiner found claims 4 and 5 unclear regarding whether the concentration percentages given are directed to the pretreatment or are the concentrations present in the final product. In response, Applicants have amended claims 4 and 5 to recite that the concentration percentages are present in the final product. Therefore, Applicants respectfully request removal of this ground of rejection.

In paragraph 4 of the Office Action, the Examiner rejected claims 1-4, 6, 7, and 13-16 under 35 U.S.C. 102(b) as anticipated by Majumdar et al. (US Pat. No. 6,025,119)

(hereinafter “Majumdar”). In response, Applicants have amended claim 1 to recite that the composition must meet the charge dissipating requirements of ESD S4.2, along with the requirements of ESD S4.1. Support for the amendment can be found in the originally filed specification at, *inter alia*, page 3, lines 15-26, page 5, lines 8-10 and page 17, lines 4-9.

Applicants respectfully submit that the Majumdar compositions are distinct from the present claimed invention. Due to these differences, the compositions of Majumdar would not meet ESD S4.2. Whereas ESD S4.1 is a method of testing charge resistivity properties, ESD S4.2 is a method of testing charge dissipation properties. For example, a sheet of copper would have a certain resistance to an electric charge applied to it, and that same copper sheet would have a specific ability to dissipate an electric charge applied to it. ESD S4.1 measures the former, ESD S4.2 measures the latter. While the copper sheet might have a low resistance to the charge, thereby allowing much of the charge to flow through it, it might not be able to safely dissipate that charge. This is the problem that is solved by claim 1, as amended: providing a composition that possesses both a certain resistance to an applied electric charge and the ability to safely dissipate that electric charge. Majumdar does not and cannot teach a composition that possesses this ability to safely dissipate the charge (or any other reference, for that matter).

As the Examiner recognizes, Majumdar teaches an invention comprising three basic elements: (1) an imaging element, including support; (2) an image-forming layer superposed on the support; and (3) an electrically conductive layer superposed on the

support. The only element of Majumdar that is electrically resistive is the third basic element, the electrically conductive **layer**. This is also the only part of the Majumdar disclosure that provides an electrical resistivity of less than 10^{10} ohms. Col. 6, lines 20-33. In contrast, the entire structure of the present invention is electrically resistive and applicants have amended claim 1 to more clearly recite that it is the entire structure that possesses these two electrical properties – resistance and dissipation. Therefore, Majumdar does not teach, disclose, or claim the fact that the entire structure can be electrically resistive, as is claimed in claim 1 as amended of the present invention.

Moreover, in order for Majumdar to be electrically resistive, it requires the use of siliceous material, such as a smectite clay. Col. 6, lines 35-36. In contrast, the present invention obtains its resistivity and dissipation properties without the use of any siliceous material. Applicants have also added new claim 23 to exclude more positively the use of siliceous material. Applicants further note that Majumdar show a point-to-point resistivity of the post-processing latex layer that at its lowest is $10^{8.8}$ ohms, which is significantly higher than the requirement of newly added claim 24.

Finally, Applicants note that the Examiner believes that Applicants have misinterpreted the Majumdar reference as it applies to teaching a required relative humidity. Applicants respectfully disagree. The Examiner cites Col. 2, lines 30-37 of Majumdar for the proposition that Majumdar states that the electrical conductivity/resistivity of the antistatic layer is independent of relative humidity. However, when read in context, it is evident that this citation is to a portion of the patent

describing the prior art rather than the invention of Majumdar. Nowhere in the reference patent does Majumdar provide that its invention is independent of relative humidity. As Applicants previously have argued, Majumdar *does* recite that in the context of its invention, humidity of from 50% to 5% must be present in order for the electrically resistivity of less than 12 log ohms/square to be realized. Col. 6, lines 25-33. This portion of Majumdar, talking about Majumdar's invention, plainly contradicts the earlier portion of Majumdar, which talked about the prior art. Thus, when read in context, Applicants respectfully submit that Majumdar requires a dependence on relative humidity, whereas the compositions recited in claim 1 are humidity independent.

Therefore, applicants respectfully submit that amended claim 1 is not anticipated by the Majumdar reference and, accordingly, Applicants respectfully request removal of this ground of rejection.

In paragraph 5 of the Office Action, the Examiner rejected Claims 1-3, 5-8, 12, and 17-19 under 35 U.S.C. 103(a) as being unpatentable over Cannady, Jr. et al. (U.S. Pat. No. 4,480,001) (hereinafter "Cannady") in view of Ashlock et al. (U.S. Pat. No. 4,500,699) (hereinafter "Ashlock"). Applicants respectfully traverse the rejection.

Applicants respectfully submit that the combination of Cannady and Ashlock, even if proper, does not teach or suggest the present claimed invention, as amended herein. More specifically, neither Cannady nor Ashlock teach the ability of their inventions to successfully and safely dissipate charges when tested in accordance with

ESD S4.2. Thus, even by combining the Cannady reference with the Ashlock reference, Applicants claimed invention would not be created because nowhere in Cannady or Ashlock is it taught, disclosed, mentioned or suggested that ESD S4.2 must (or can) be met. Cannady does teach surface resistivity values of less than 10^6 megohms (10^{12} ohms) (Col. 5, lines 8-10) but does not teach any charge dissipating values. Ashlock does not teach any surface resistivity values or charge dissipating values.

Therefore, regardless of whether or not it would be obvious for a person of skill in the art to combine the Cannady reference with the Ashlock reference (which Applicants do not admit), Applicants' invention would still not be created; thus, Applicants' invention cannot be obvious in view of the applied art.

Further, as with Majumdar, neither Cannady nor Ashlock teach, disclose, or claim what humidity levels are required or forbidden. In contrast, claim 1 specifically recites that the resistance of the structure is substantially independent of relative humidity. Therefore, again, even by combining Cannady with Ashlock, one of ordinary skill in the art would not create that which Applicants claim as their invention.

Finally, the Ashlock reference teaches that the static dissipating particles should have an average size of 200 angstroms (20 nm) for dispersant particles having a refractive index of about 1.5, and 100 angstroms (10 nm) or less if the dispersant particles have a refractive index of 2.0 or greater. However, Applicants' invention utilizes particles that are much larger. For example, the average particle size of the nanophase antimony tin

oxide from Ishihara Corp. used in Example 5 is 0.16 µm (160 nm) to 0.20 µm (200 nm).¹ Additionally, the average particle size of the Baytron ® P particles used in Example 7 is 80 nm.² It would not be obvious to a person of skill in the art to substitute particles that are at least four times, and up to twenty times, as large as those used in Ashlock in order to obtain the results made possible by Applicants' invention. Therefore, Applicants respectfully request removal of this ground of rejection.

In paragraph 6 of the Office Action, the Examiner rejected claims 9-11 under 35 U.S.C. 103(a) as being unpatentable over Cannady in view of Ashlock as applied to claim 1, and further in view of Lindsay et al. (U.S. Pat. No. 4,208,696). Applicants respectfully request reconsideration and removal of this ground of rejection based upon the above arguments directed towards the Cannady and Ashlock references.

Based on the above, Applicants respectfully submit that the claims of the present invention are in proper form for allowance. Favorable consideration and early allowance are therefore respectfully requested and earnestly solicited.

Respectfully submitted,



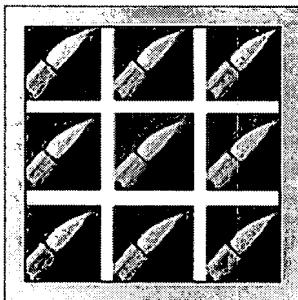
Alan B. Clement
Reg. No. 34,563

¹ Attached hereto as Exhibit A is a printout from Ishihara's website detailing the properties of the particles used in Example 5.

² Attached hereto as Exhibit B is a brochure from Baytron® that lists the mean particle size of the Baytron® P particles.

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WHITE PIGMENTS **INTERMEDIATES**
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SN-100D

ISK

Transparent Electroconductive Tin Oxide

TIPAQUE® SN-100 (D)

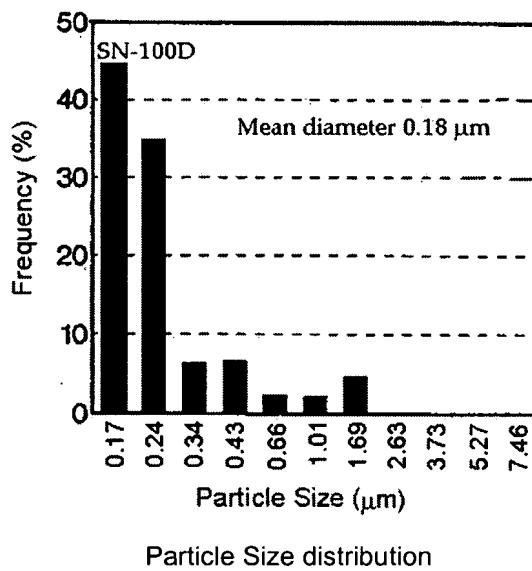
TIPAQUE SN-100(D) is an innovative ultrafine Sb-doped tin oxide product, slurry type grade of SN-100P. It was designed for applications where both high transparency and electroconductivity are required in a water-soluble resin coating.

■ Chemical and Physical Characteristics

Composition	Sb-doped SnO ₂
Particle Size (μm)	0.16 ~ 0.20 ¹⁾
Powder Resistance (Ωcm)	5 ~ 30 ²⁾
Specific Gravity	6.6 ²⁾
Specific Surface Area (m^2/g)	70 ~ 100 ²⁾
pH	5.0 ~ 7.0
Concentration (wt %)	30

1) secondary particle size

2) data obtained from evaporated powder



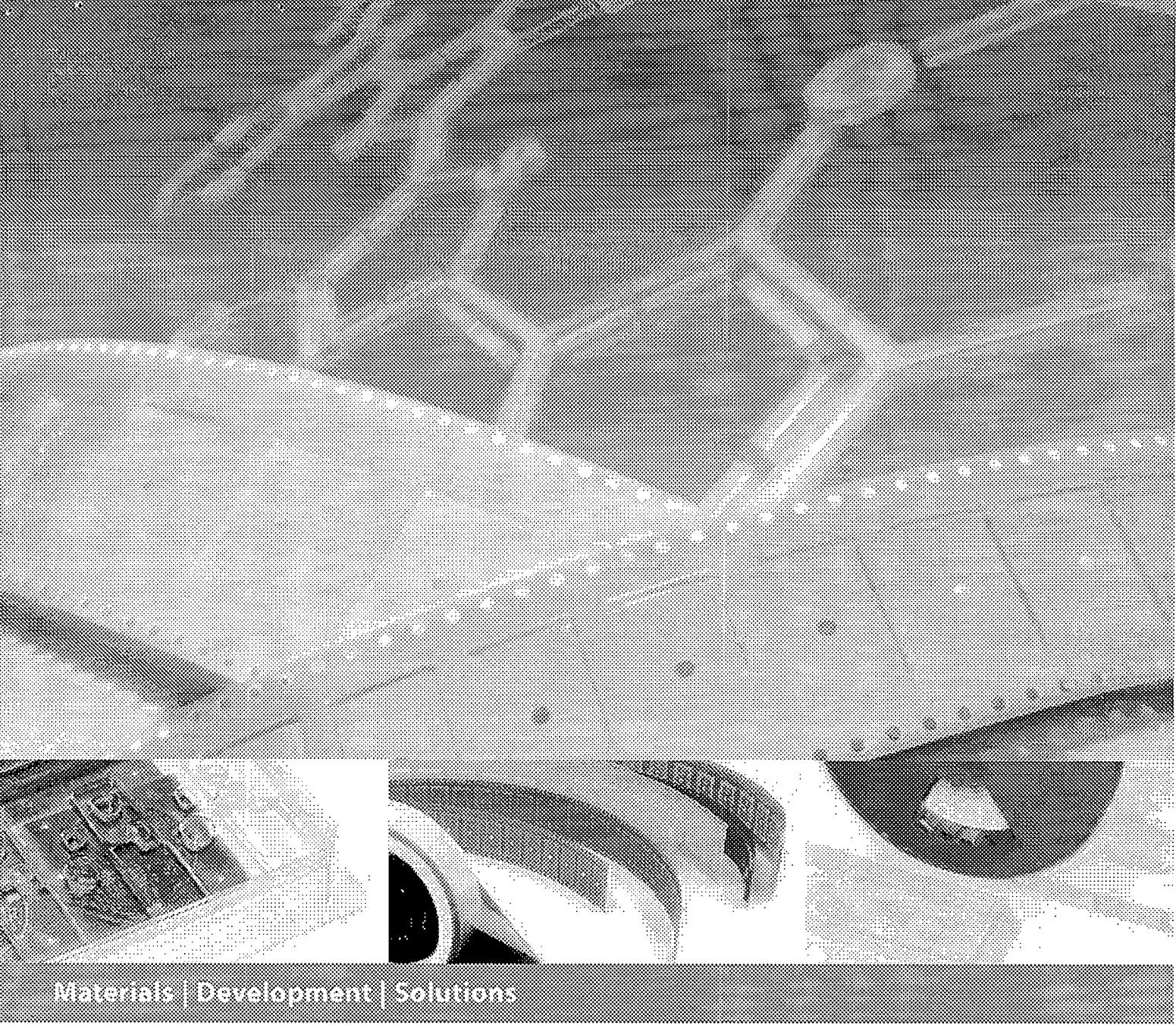
■ Suggested Uses

- Anti-electrostatic paints, inks, and coatings (glass, film, etc.)
- Anti-electrostatic fibers (fabric, carpets, etc.)
- Others (Recording paper, toner, etc.)

The information presented herein is believed to be reliable. However, no warranty is expressed or implied and no liability assumed in connection with any of this information. It is offered only for your consideration, investigation, and verification.

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Materials Development Solutions

BAYTRON® P
BAYTRON® PH

BAYTRON® P and BAYTRON® PH

Discharging quality !

BAYTRON® P and PH are based on PEDOT / PSS – chemistry for electronic applications. The unique properties of this conductive polymer, conductivity and transparency, allow a range of novel and technically advanced applications.

Typical applications are the antistatic coating of films for example based on PET, PS or Polycarbonate for the manufacture of:

- > antistatic trays and blister tapes
- > the production of films for dust protection of components e.g. in the LCD industry
- > the production of photographic films with an antistatic effect
- > antistatic coating of glass
- > other ESD and dissipative applications

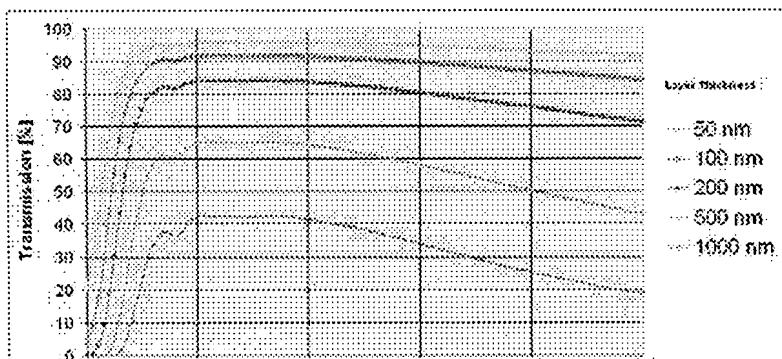
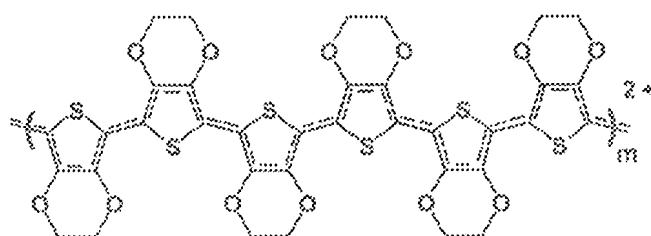
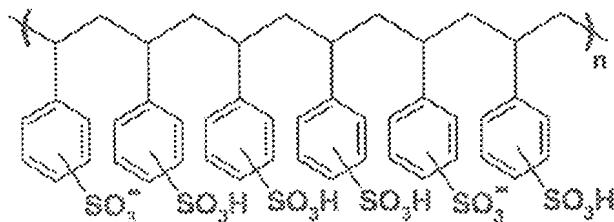
BAYTRON® P and BAYTRON® PH can be used directly or be pre-formulated in combination with solvents or binders, then applied to various surfaces such as PET and Polycarbonate. Details are available in our coating guide.

Application Methods:

- > Dipping
- > Spraying
- > Printing (e.g. gravure coating)

Chemical and physical data of *BAYTRON® P and PH*

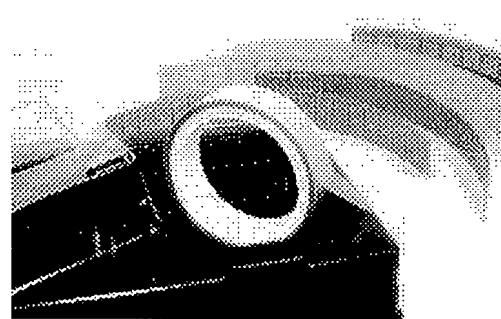
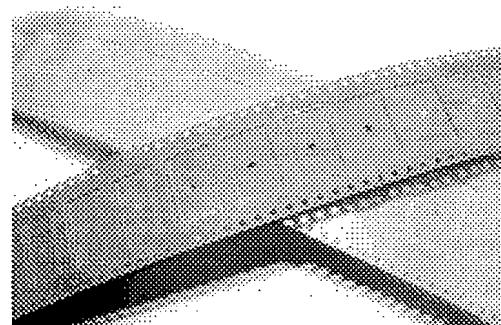
Chemical name: Poly(3,4-ethylenedioxythiophene)poly(styrenesulfonate) aqueous dispersion
Synonym / Abbreviation: PEDT/PSS, PEDOT/PSS



BAYTRON® P Properties

- > High transmission in the visible spectrum
- > Transparent, colorless to bluish coatings
- > Minimum surface resistivity of approximately 300 ohm/square can be achieved, depending on the manufacturing conditions
- > Good resistance to hydrolysis
- > Good photostability and good thermal stability
- > High absorption in the range of 900 to 2000 nm
- > No absorption maximum in the visible spectrum up to 800 nm

Form	liquid
Odour	odourless
Color	dark blue
Conductivity	max. 10 S/cm (depending on the type of coating formulation)
Solid content	1.2 to 1.4 %
Na content	max. 500 ppm
Sulfate content	max. 80 ppm
Viscosity	60 to 100 mPas
pH value	1.5 to 2.5 at 20 °C
Density	1 g/cm ³ at 20 °C
Mean particle size	d50 approximately 80 nm (swollen)
Refractive index, n	1.5228 at 589 nm (dried layer)
Surface tension	71 mN/m at 20 °C
PEDT :PSS ratio	1 : 2.5 (by weight)
PEDT work function	approximately 5.2 eV
Boiling point	approximately 100 °C
Vapor pressure	25 mbar at 20 °C

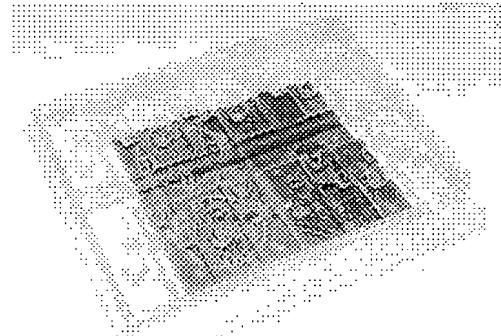
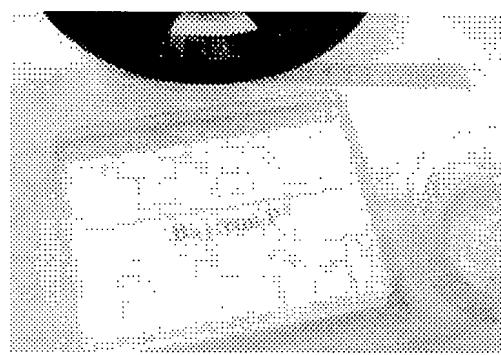


BAYTRON® PH Properties

A homogenised version of BAYTRON® P

- > Very high transmission in the visible spectrum
- > Transparent, colourless to bluish coatings
- > Good resistance to hydrolysis
- > Good photostability and good thermal stability
- > High absorption in the range of 900 to 2000 nm
- > No absorption maximum in the visible spectrum up to 800 nm

Form	liquid
Odour	odourless
Color	dark blue
Conductivity	max. 10 S/cm (depending on the type of coating formulation)
Solid content	1.2 to 1.4 %
Na content	max. 500 ppm
Sulfate content	max. 80 ppm
Viscosity	15 to 30 mPas
pH value	1.5 to 2.5 at 20 °C
Density	1 g/cm ³ at 20 °C
Mean particle size	d50 approximately 30 nm (swollen)
Refractive index, n	1.5228 at 589 nm (dried layer)
Surface tension	71 mN/m at 20 °C
PEDT :PSS ratio	1 : 2.5 (by weight)
Boiling point	approximately 100 °C
Vapor pressure	25 mbar at 20 °C



According to our experience to date both BAYTRON® P and BAYTRON® PH are stable for up to 9 months from production date, when stored at 20 °C in sealed, original containers.

Once the container is opened, care must be taken to ensure that the dispersion does not dry on the walls, as the products can no longer be readily dispersed in water if dry and the optical properties of the PEDT coating could be impaired.

The conditions of your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by H.C. Starck. All information is given without warranty or guarantee. It is expressly understood and agreed that the customer assumes and hereby expressly releases H.C. Starck from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind H.C. Starck. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent. Properties of the products referred to herein shall as general rule not be classed as information on the properties of the item for sale. In case of order please refer to issue number of the respective product data sheet. All deliveries are based on the latest issue of the product data sheet and the latest version of our General Conditions of Sale and Delivery.

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